

MARINE REVIEW.

VOL. IV.

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No. 7.

The Freight Situation.

Reduced grain rates out of Chicago have lowered ore freights during the past week, and the decline would have been very marked but for a demand on contract tonnage in the ore trade and some help in grain shipments at 2 cents a bushel from Detroit and Toledo at Buffalo. The Ecanaba rate was reduced to 90 cents, with indications of a further drop of 5 cents on Thursday, and Marquette boats had been taken at \$1.10. Although little, if anything, had been done in wild tonnage for Ashland, it is not probable that the head of the lake would pay more than the Marquette rate. On ore from Two Harbors to South Chicago, \$1.10 has been the rate for several days past. The Lake Superior rate on coal is strong at 50 cents, especially since Buffalo has begun to pay 40 cents. Other coal rates are 50 cents to Chicago, Milwaukee, Green Bay and Manitowoc, 45 cents to Escanaba, 50 and 55 cents to Racine, 40 cents to Lake Huron ports and 30 cents to ports on the St. Clair river.

Benefiting American Vessels and American Routes.

Regarding the ruling of the treasury department on the question of bonded wheat for shipment via Duluth, La Salle & Wolvin, Duluth vessel agents, say: "Formerly grain coming from Manitoba for shipment via Duluth had to be entered when it reached the boundary. At the time such entry was made shippers were compelled to clear the grain for shipment via some specific port, and it was almost the universal rule that the Manitoba shippers when entering their grain for shipment cleared it via Duluth and Sarnia; and even though they afterwards might wish to ship grain via Duluth Buffalo and New York the custom laws would prevent their so doing by reason of its having been entered for shipment via Sarnia. They could not, accordingly, change the route planned for the shipment of the grain if at any time they so desired. The new ruling of the treasury department will enable the shippers of Manitoba wheat to change its route from Duluth via any American port which they see fit. This will give American vessels and American ports the benefit of such shipments, which we never before enjoyed."

Grain entered under the new ruling, however, can be forwarded only in cars or vessels forming part of a regularly bonded route. This will give the business to the line boats.

Quick Trips and Big Loads.

The Republic Iron Company's steamer Republic has just finished eight round trips with ore from Marquette in forty-five days, including time of loading and unloading in every case. The Republic has been getting one-day dispatch in unloading of late, and some idea of the way in which this class of boats can bring down ore under such dispatch can be formed when it is known that she was in Marquette loading on Monday last and will be there again Saturday. The round trip distance, Marquette to Cleveland is 1218 miles and the Republic carries about 2,200 gross tons of ore, so that in these eight trips of forty-five days the boat has delivered 17,600 gross tons of ore and has traveled 9,744 miles. It is doubtful if any of the flyers in the ore trade can show a record better than this. Even the boats of individual owners are getting good dispatch. The propeller George T. Hope has just made a six day trip to Marquette including time of loading and unloading. She left on Thursday, the 6th inst., returned with a cargo of ore and left again on Wednesday night last.

The steel steamship E. C. Pope has added a few tons to her own record from Lake Superior, which is far in advance of any of the other big carriers. She has just taken 2,781 gross or 3,144 net tons of ore from Two Harbors to South Chicago on a draft of 14 feet 5 inches.

The Emily P. Weed, which is reported to have made the run from the Sault to South Chicago at an average better than 14 miles an hour, loaded, took 101,000 bushels of wheat from Chicago to Buffalo. This is the largest wheat cargo ever carried on the lakes but does not equal in weight some of the corn cargoes taken out of Chicago during the early part of the season.

The Scheme May Prove Profitable.

Capt. McDougall's scheme of building for the World's Fair an immense passenger boat 450 feet long, after the whale-shape type, is based on the expectation that great numbers of the visitors to the fair from all parts of the world will seek the enjoyment of a lake ride, and especially a fast trip to Mackinaw. The boat, if built, will be engaged in the trade between Chicago and Mackinaw, as she would hardly be fitted, on account of her size, for service in the ordinary lake trade, and the expectation, undoubtedly, is to have the steamer pay for herself during the progress of the fair. The preparation at this time of plans and a large painting of the proposed boat now on exhibition at West Superior is for the purpose of interesting the New York directors of the company in the scheme, which will certainly be no small undertaking. The boat's cabin, which will be raised about 8 feet above the deck on turrets, after the style of cabin on the steamers now in service, will be 320 feet long and it is expected to accommodate 3,000 passengers.

Settled at 75 Per Cent. of the Claim.

Since the announcement of a settlement in the Kasota-City of Detroit collision matter some time ago, curiosity has attached to the terms of the agreement, as the City of Detroit, which sunk the Kasota, was insured in the English Lloyds against collision liability and the loss was made good by the English underwriters. The settlement was made on a basis of 75 per cent. net. The home companies holding risks on the Kasota were out only about \$15,000, and the owners, Capt. W. C. Richardson and others of Cleveland, who got \$90,000 insurance, also received a portion of the settlement money on their uninsured interest of one-tenth. Capt. Falcon of Chicago is still working on the wreck in the Detroit river. He has sunk and made fast in the vessel's hold about one-half of the number of casks intended to raise her.

Sault Canal Business.

The July record shows the greatest business for any one month since the canal was constructed. Of the 1,830 passages by vessels engaged in transporting the 1,529,553 tons of freight that passed through the canal, 1,295 were steam, 420 sail and 115 unregistered craft, and the registered tonnage was 1,462,920. July is the heavy month in the canal, as the business during July 1890 also exceeded any previous record for a corresponding period.

Vessel owners need no longer fear obstruction from a second bridge across Portage lake. The Houghton bridge is now owned by the county and tolls are no longer collected.

Chat With a Chief Engineer.

I see an article in the REVIEW of July 30, headed "Value of Independent Condensers," giving as printed below, a statement of comparison of two boats, the E. P. Wilbur with an ordinary air pump and condenser and the Saranac with an independent condenser:

Steamer Saranac, trip of August 8, 1890.	Independent air pump.
Miles run.....	1,830.
Coal used, tons.....	197.
Total revolutions.....	645,834.
Coal per revolution, lbs.....	.61
Steamer E. P. Wilbur, trip of May 11, 1890.	Connected air pump.
Miles run.....	1,830.
Coal used, tons.....	250.
Total revolutions.....	677,080.
Coal per revolution, lbs.....	.74

Now let us look into this matter by facts well known to engineers and make some inquiry. From indicator cards taken off an engine, duplicate of the E. P. Wilbur's, developing 1,500 horse power, it took 20 horse power to drive the air pump. Cards taken from other builds of engines indicate that it takes about .015 per cent. of the power of a compound engine to drive the air pump. We will approximate the power of the boats in question at 1,500 horse power and that required to drive the air pump at 22.5 horse power. At 72 revolutions per minute, the Saranac ran 149 hours and 29 minutes while the Wilbur ran 156 hours and 44 minutes. Allow two and a half pounds of coal per horse power per hour consumed. This is a liberal allowance, as the builders on trials have developed a horse power on less than two pounds. In the 156 hours the connected air pump on the Wilbur would take 8,875 pounds of coal. The independent air pump on the Saranac is driven by the most expensive engine yet devised to develop power, and cannot possibly develop an indicated horse power on less than seven pounds of coal per hour. Allowing this, the independent condenser pump would use developing 22.5 horse power in 149 hours, 23,467 pounds of coal. In either case the amount of coal would be insignificant in the aggregate, but I have called attention to a loss and given the cause of it.

Now let us compare the temperature of the hot wells as attained in practical workings. It is no unusual thing with a connected air pump and condenser to have the temperature of feed water to boiler from hot well 130 to 150 degrees, while that of the independent condenser runs from 90 to 110 degrees. The builders of the independent condensers satisfied a demand for an air pump that was free as possible from breakage, a serious fault with the attached air pump when the main engines are turned up from 90 to 100 revolutions. The builders of the main engines came to the rescue of the much praised independent condenser by putting in a heater to take care of this frigid feed water. Of course I understand that there is an advantage in vacuum when the temperature at condensation is 90 degrees, the difference between that temperature and 130 degrees resulting in three inches or more vacuum. Such comparison as that published, however, proves nothing. The data is insufficient and nothing computable is shown by it. The figures I have furnished are computable and they make a charge against the independent condenser. Let the latter make a counter charge with proper data. If the comparative statement of the performance of the Wilbur and Saranac proves anything for the independent condenser, the following proves twice as much against it, for the comparison is made on the same boat and engines: The steamer Inter Ocean, built in Detroit in 1872 and now in commission, came out with an independent air pump and condenser, and the usual frigid feed water was the result. The builders of the main engines in this case did not come to the rescue of the independent condenser with a heater, and she burned, towing the barge Argonaut from Buffalo to Chicago

and return, from 220 to 260 tons per trip. I think she was run four seasons this way and then the independent air pump and condenser was taken out and the air pump was connected to main engines with no further changes to engines or wheels. The result was that she towed the Argonaut the first five trips between Chicago and Buffalo and return on a consumption of 147½ tons of fuel per trip.

A well designed air pump connected with the main engines ought to run one season with little or no attention, save oiling. I mean by a well designed air pump, one with a large diameter and short stroke to decrease the velocity of bucket so it could pump solid water and not endanger its breaking. As between a well designed connected air pump and the independent condenser there is no question of choice in my mind, and nothing but figures and cards will convince me. I have not charged the independent air pump with the maintenance of two steam cylinders, oil and repairs, but let this go for the good of trade.

E. N. GINEER.

Lake Superior Coal and Ore Movement.

The St. Mary's Falls canal report for July presents some figures regarding the Lake Superior coal movement, upon which vessel owners have based expectations of high freights, especially on soft coal. Shipments of both hard and soft coal to Lake Superior during July aggregated 436,254 tons, against 342,854 tons during July 1890. The total Lake Superior movement on August 1, coal of all kinds, was 1,242,545 tons, against 1,027,583 tons on August 1, 1890, or a gain this season of 214,962. Notwithstanding this gain and the fact that the movement during July was the largest for any one month in the history of the canal, vessel owners hold to the opinion that soft coal is not going forward fast enough, and shippers agree that consumption by the railroads of the northwest will be largely in excess of last year, on account of the heavy grain crop. Of this total increase of 214,962 tons, 100,000 tons or more is hard coal, as Buffalo's shipments of hard coal to both Lake Michigan and Lake Superior were on August 1 302,960 tons in excess of the output on the same date a year ago. The railroads of the northwest use the soft coal going to Lake Superior and they will have an immense business from this time on. Cars now bringing grain from Duluth and Superior are going out loaded with coal. Already there is a wide difference between hard and soft coal freights to Lake Superior and the difference will undoubtedly increase toward the close of the season, as the great demand will be for soft coal.

The canal report for July shows a movement of freight of all kinds aggregating 1,529,553 net tons, against 1,416,035 net tons during July of last year, but the number of passengers is only 6,963 against 7,557 in July 1890. The movement of different kinds of freight through the canal during the past month was:

	East-bound.	West-bound.
Coal.....	.....	436,254 tons.
Four.....	489,629 bbls.	100 bbls.
Grain.....	.....	9,000 bu.
Corn.....	99,500 bu.	.....
Wheat.....	1,941,849 bu.	.....
Building stone.....	8,079 tons.	.....
Copper.....	13,692 tons.	.....
Manufactured iron.....	.....	7,593 tons.
Iron, ore.....	798,086 tons.	.....
Iron, pig.....	4,118 tons.	.....
Salt.....	.....	10,061 bbls.
Lumber.....	53,216 M feet	.....
Silver, ore.....	20 tons.	.....
Unclassified freight.....	8,247 tons.	50,591 tons.
Passengers.....	3,101	3,862

There was more iron ore taken through the canal from Lake Superior during July than during May and June together, and yet July shipments this year were not equal to the shipment of the corresponding month in 1890. The figures are 799,086 net tons for the past month, against 815,205 net tons during July 1890. Ore shipments from Lake Superior to August 1 are 1,540,293 net tons as compared with 2,458,136 net tons on the same date in 1890, a decrease this season of 917,843 tons.

Record of Speed and Big Cargoes.

[Masters or owners are invited to report improvement on this list.]

Iron ore: Lake Michigan—Maryland, Inter-Ocean Transportation Company, of Milwaukee, 3,322 gross, or 3,737 net tons, Escanaba to South Chicago, draft 16 feet 6 inches; E. C. Pope, Dry Dock Navigation Company of Detroit, 3,221 gross, or 3,608 net tons, Escanaba to Ashtabula, draft about 16 feet. Lake Superior—E. C. Pope, Dry Dock Navigation Company, of Detroit, 2,781 gross, or 3,144 net tons, Ashland to Lake Erie, draft 14 feet 5 inches.

Grain: W. H. Gilcher, J. C. Gilchrist, of Cleveland, 114,982 bushels of corn, Chicago to Buffalo; America, M. M. Drake, of Buffalo, 111,507 bushels of corn, Chicago to Buffalo.

Speed: Owego, Union Line, of Buffalo, Buffalo to Chicago, 889 miles, 54 hours and 16 minutes, 16.4 miles an hour; Saranac, Lehigh Valley Line, of Buffalo, Buffalo to Lime-Kilns, 240 miles, 15 hours and 10 minutes, 16 miles an hour.

Iron Mining.

VALUE OF LEADING STOCKS.

Quoted by Chas. H. Potter & Co., No. 104 Superior St.

Stocks.	Par Value.	Bid.	Asked.
Cleveland-Cliffs Iron Company.....	\$100 00	\$.....	\$ 77 50
Champion Iron Company.....	25 00	.....	87 50
Chandler Iron Company.....	25 00	37 00	39 00
Chicago and Minnesota Ore Company.....	100 00	.....	100 00
Jackson Iron Company.....	25 00	90 00	.....
Lake Superior Iron Company.....	25 00	51 00	53 00
Minnesota Iron Company.....	100 00	70 00	73 50
Pittsburg Lake Angeline Iron Co.....	25 00	132 50	135 00
Republic Iron Company.....	25 00	24 00	25 00
Ashland .....	.....	.....	52 50

Mining stocks are not active but values are fairly well upheld. Interest still centers in the stock of the Republic company, which might be expected to show a heavy decline on account of the fire, but as far as can be learned no sales have been made below \$25. Offers of the stock at \$23 or even \$24 would find ready buyers. Advices from the mine on Wednesday were to the effect that the management expected to resume work before the close of the week, and from this it might be presumed that the fire is out but there is no definite announcement in that regard as yet. Chandler stock, notwithstanding the Minnesota purchase, which might be expected to be in the interest of insiders, holds up well in price.

The impression has gone out that the deal through which the Minnesota Iron Company is soon to acquire a control of the Chicago and Minnesota Ore Company and with it a control also of the Chandler Iron Company, is in a consolidation of these companies. Such is not the case, however, as has already been explained. A consolidation of these companies could not be effected under the state laws governing their affairs. The Minnesota company will simply own a control of the stock of the other two companies, which will retain their individual organizations. Cleveland representatives of all three of the companies involved say there is no doubt of the deal going through, and all that is awaited is an official announcement of the transfer of stock.

A discovery of great importance to the Gogebic range has been made by the Metropolitan Land and Iron Company operating the big Norrie mine. It has been claimed that deposits did not extend to any considerable depth on this range, and a diamond drill was put to work near the Ashland property. At a depth of 1260 feet a deposit 40 feet thick was passed through, when the drill went into a formation similar to that immediately above the rich deposit. Work is being continued and that another vein of ore will be struck is quite certain. The length of the Gogebic range has been established and now the discovery of the depth is made.

At the Paint River the output is about 400 tons per day, and about 20,000 tons have been shipped. The stock piles contain 9,000 or 10,000 tons which is fully as much as at the beginning of the season. The year's output will depend very much upon the state of the market from this time forward. Should there be a demand, 70,000 can be sent out but the sales so far do not exceed 40,000 tons. Some exploratory work is being done, and there is every reason to believe that the mine is only in its infancy as a producer.—Norway Current.

The Shafer mine was attached by the Crystal Falls bank on Tuesday, on a claim of \$4,000. The bank, it seems, advanced

the money in May last to pay the mine's April wages. Other smaller claims were filed, the entire amount aggregating \$5,000 or \$6,000. The Himrod Brothers of the Chicago Furnace Company the principal owners of the Shafer, arrived at Crystal Falls Thursday, satisfactorily settled all claims and mining operations were resumed the same night.

The mine of the Escanaba Iron & Land Company shipped its first cargo of ore from the port of Escanaba last week. The body of ore struck some time ago at the "old Smith mine" has proved to be of considerable extent and of good quality. At the present workings, which are below the workings of the Swanzy, the ore is of fine quality, perfectly clean, and 68 feet in width. It is a Bessemer ore.

Michigan owners of the Great Eastern mine, a property only 600 feet distant from the Mastodon of the Crystal Falls district, have resumed development work. They claim to have a good mine but they lack capital necessary to get ore out very fast. The deposit is said to be of good length with the ore very near the surface. Cross-cutting to determine the width of the vein will soon be begun.

At the Lake Superior mine the big stocks of hematite have been nearly all shipped. The non-Bessemer pile is gone and there is but little left of the Bessemer. The steam shovels of this company are of great assistance in loading cars and the piles of ore are so clean that no delay is had in selecting or sorting.

The Dunn mine shipped 6,000 tons of ore last week and very little of it was taken from the stock piles which still contain 30,000 tons. It is expected that the shipments of the mine will equal those of 1890.

Estimates on St. Mary's Falls Canal Work.

Now that the excavation work on the new St. Mary's Falls canal lock is finished the following summary from Gen. Poe of the estimated cost of the whole work, the largest of its kind in the world, will be interesting:

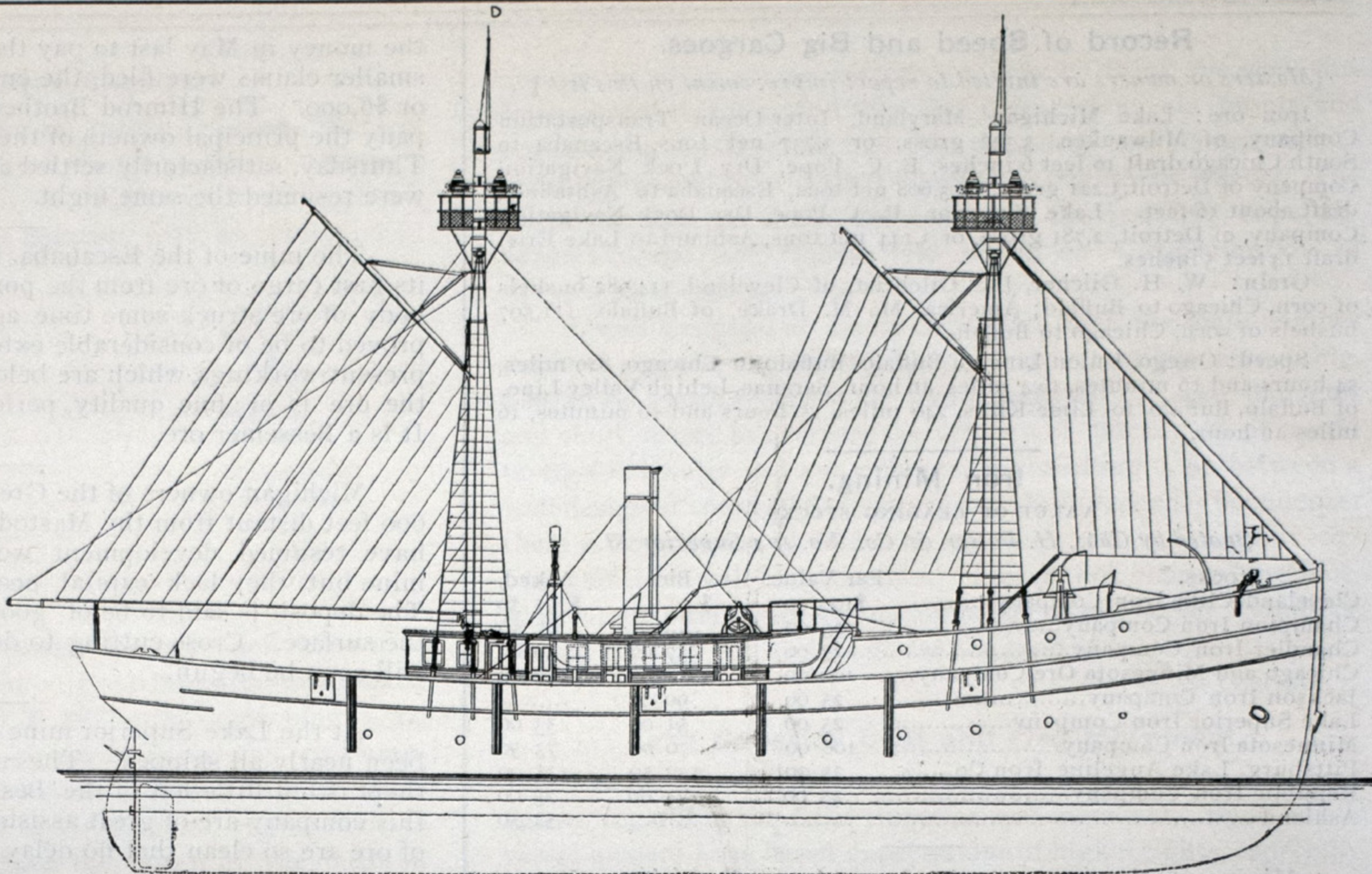
For coffer-dam.....	\$ 195,392
For excavating lock-pit.....	230,000
For culverts and lock floor.....	455,000
For masonry on lock walls.....	980,000
For lock gates.....	250,000
For lock machinery.....	100,000
For deepening the canal.....	732,000
For new movable dam.....	191,000
For building pier in front of Fort Brady Reservation and extending northeast pier.....	90,000
For earth filling.....	44,000
For building canal office, warehouse, fire-proof vault, etc.....	75,000
For engineering and office expenses.....	300,000
For pumping lock-pit.....	25,000
For contingencies, 25 per cent.....	947,773
Total	\$4,585,865

One Way of Securing Increased Speed.

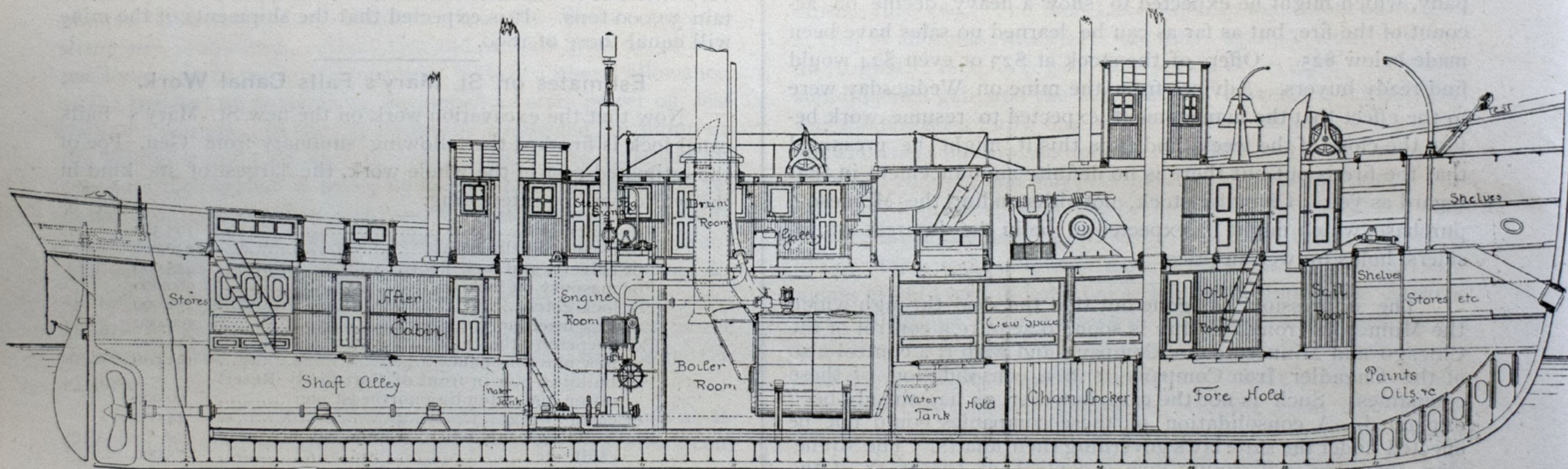
The REVIEW's Chicago correspondent says there is a difference of opinion in that city as to whether it is a good plan to keep the big steamers when running on light draft well up at the head in the endeavor to increase speed. He says that the new twin-screw steamship Virginia has been seen to come into port with her head a foot and probably two feet out of water, and that she is trimmed in this way with a view to speed. In the case of the Virginia it may be said that with her ordinary cargo she is probably out at the head more than is desired, and this is attributed to a change in the plans after the boat was under way, by which a large and magnificent dining room has taken a place below that was designed for a larger quantity of freight, and the boat's trim is accordingly changed to that extent, but there is without doubt great benefit derived from keeping the big steel boats well up at the head when flying light, or running under very light cargo such as a passenger boat would carry. All of the masters of the big vessels in the ore trade have orders to free the forward compartments of their boats when running light in fair weather, in order to get the wheel down, and the increased speed thus secured is very marked.

Government Light-Ships.

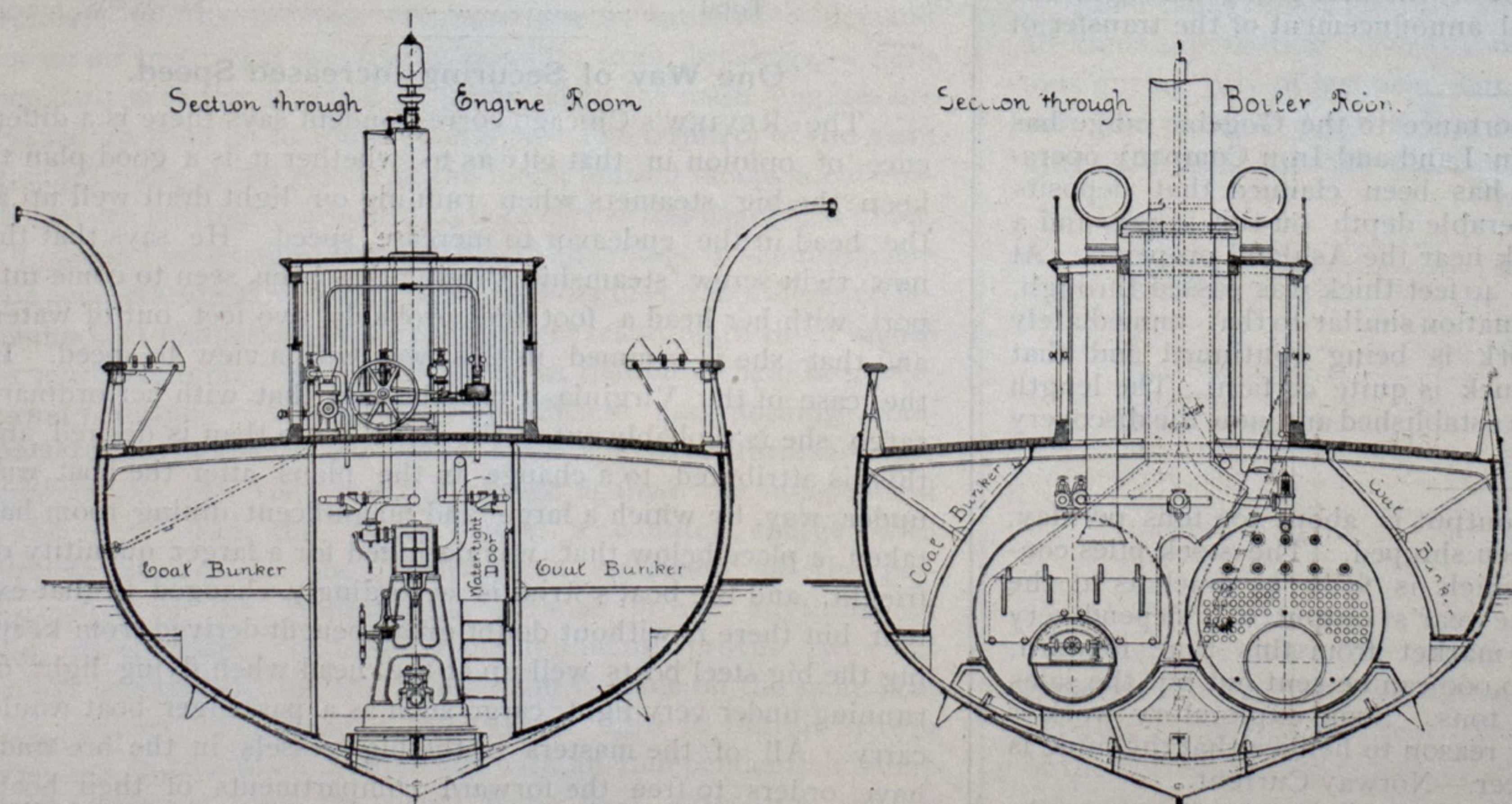
The accompanying illustrations show plans for the four light-ships Nos. 51, 52, 53 and 54, for service on the Atlantic coast, and for the construction of which F. W. Wheeler & Co. of West Bay City, Mich., received the contract a few weeks ago, having underbid the coast yards as well as lake builders, whose prices were all under those of the coast. F. W. Wheeler & Co. will receive \$189,300 for building the four boats. In the engravings a general view as well as a longitudinal section and cross section, showing the machinery, are presented. One of the boats, No. 51, will be provided with electric light, but the shipbuilder will not furnish this part of her equipment.



LIGHT-SHIP NO. 51, FOR UNITED STATES LIGHT-HOUSE SERVICE.



LIGHT-SHIP NO. 51, LONGITUDINAL SECTION



CROSS SECTIONS, LIGHT-SHIP NO. 51.

The boats are duplicates and a description of No. 51 will serve for all. The general dimensions are: Length over all, 118 feet 10 inches; length from inside of rudder-post to inside of stem, 110 feet; beam, molded, 26 feet 6 inches; depth of hold, from top of beam to top of keel, 14 feet 6 inches. In addition to the sails carried on the light masts, the ship will be provided with a propeller and steam power, which will not only enable her to return to her post if carried away by a gale, but will also be of much assistance in keeping her in place, as they can be run during a storm, and thus

diminish the great strain on the cables. The hull, entirely of iron, will have four main bulkheads extending up to the main deck. The vessels will have a bar-keel and a sternpost forged solid with the rudderpost, and arranged for the propeller shaft in the usual way. All plates in the shell of the vessels, the bulkheads, bulwarks, etc., are to be machine planed, and no other method of fairing the strakes or preparing edges for calking will be allowed. The plating will be run in inside and outside strakes, perfectly fair, and smoothly fitted up and riveted. The vessels will be provided with one outside bilge-keel on each side, extending for about 55 feet, and the run of these keels must conform with the natural run of the water when the vessel is in motion.

Under the main deck, commencing aft, will be located store-room, cabin, with four staterooms, coal bunkers, engine and boiler-room, crew space with 10 berths, lockers, wardrobes, tables, etc., pantry, oil-room, sail-room, and the forepeak will be fitted up as a storeroom with necessary lockers and shelves. Under the lower deck, forward, will be located water-tanks, chain lockers, forehold, and a storeroom for paint, oil, etc. On the main deck aft will be placed steering gear, skylight and companion way for cabin, and the main-deck house will extend from about frame No. 17 to about frame No. 35, consisting of lantern-room, pump, and fog-whistle machinery room, and galley. Forward of this house, and under the forecastle deck, will be located a steam windlass with elastic chain stoppers, lockers, and water-closets for officers and crew. On the forecastle deck will be located a lantern-house, hoisting engine, bell, etc., and on top of the main-deck house will be placed a steam fog-whistle and a hoisting engine; both the top of the deck house and the forecastle deck will be surrounded by a strong and neatly built iron railing. On the main deck will also be located two boats, necessary ringbolts, bitts, chocks, fair-leads, scuppers, two hard wood stairs leading to the forecastle deck, and all other fittings for all purposes required by the service. The vessel will be rigged with two masts and trysail masts. The cabin and crew space will be heated throughout by steam, well ventilated and fitted with all necessary conveniences and arrangements for comfort. The masts are to be 67 feet in length. The rigging will be of wire rope, and the sails arranged as shown in the general view of the boat.

There will be one right-handed, two-bladed, cast-iron screw propeller of about 6 feet diameter and suitable pitch, driven by an inverted non-condensing single-cylinder engine, the cylinder to be 17 inches in diameter and a stroke of 17 inches. The propeller shaft will be 5 inches in diameter. There will be two cylindrical single-ended steel boilers of the Scotch type, 8 feet in diameter and 9 feet long, provided with corrugated furnace, 36 inches in diameter, in each boiler. There is to be furnished and fitted in place one horizontal, non-condensing engine, about 5 inches diameter of cylinder and 6 inches stroke, with properly attached machinery for operating the steam whistle, also one Baird's No. 3 distilling apparatus, with necessary evaporator, filter, pumps, etc. The steam whistle will be 12 inches diameter of bell.

Launch of the Steel Steam Yacht Wadena.

If there had been any imperfections in the hull of Mr. J. H. Wade's elegant steam yacht the glistening white paint that covered her plates would have shown them up to those who attended the launch, at the yards of the Cleveland Ship Building Company, Tuesday. The manganese wheel with blades sloping aft attracted considerable attention. It is of the modern French pattern, $7\frac{1}{2}$ feet diameter, and similar to those in use on French men-of-war. The slope reduces the vibration to a minimum. The excellent righting movement was shown to advantage when she went off the stocks onto her beam ends. She returned to an upright position almost immediately and remained there. Her bilge keels, the first ever used in yacht construction in this country, and excepting one case unknown until recently to the builders, the first in any country, were partly responsible for this performance. These keels extend half the length of the boat just above the turn of the bilge. The hull without main engines drew 3 feet forward and 7 feet aft when she settled in the water. The dimensions of hull are 160 feet keel, 21 feet

beam and 12 feet deep, being divided into six water-tight compartments, according to suggestions from a committee appointed by the English board of trade. Another feature is the forced draft produced by hot blast.

Her engines are $15\frac{1}{2}$, 26 and 42 inches with 22 inches stroke. The boiler is $12\frac{1}{2}$ by 13 feet and will be allowed 170 pounds pressure. White canvas spread from two spars and her white hull will make a pretty effect, and if her engines develop the power that is reasonably expected, this yacht might keep company with the white squadron if she should come up with them in her two year's cruise around the world. The 135-light plant and the 2,000 candle power search light is being furnished by the Thomson-Houston Company. Capt. Dayton will be in command above deck and F. B. Smith will be chief engineer.

Memorandum of a Whale-Back's Ocean Voyage.

The memorandum of the trip of the whale shaped steam-barge Wetmore across the Atlantic has been received at the office of the American Steel Barge Company, West Superior: "In steaming 384 hours from Montreal to Liverpool used 266 tons of coal; distance run 3,032 miles (knots). Had head sea 100 hours; beam sea, very high, 50 hours; aft 50 hours; various the rest. Had very thick weather in channel. Carried 26 tons of coal on deck from Sydney to clear off banks; rough sea; lost no coal. Are having a large number of visitors at 1s. per head; goes to orphan asylum here. All Liverpool merchants coming on board. Cargo turning out splendid." The mercantile agents of the American Steel Barge Company at Liverpool, are Messrs. G. T. Soley & Son.

Cleveland Matters.

Joseph D. Lillibridge, adopted son of Mr. H. P. Lillibridge, and a member of the vessel brokerage firm of Lillibridge & Newell, died at his home in Cleveland, Monday. He was in his thirty-second year.

Suit for \$5,000, the alleged value of 500,000 feet of logs, was commenced in Cleveland against S. B. Grummond by C. A. Krauss & Son. The claim is made that the tug Champion towing 850,000 feet of logs from Black River to Cleveland put out of Thunder bay before a storm subsided which caused the raft to break. Only 350,000 feet of logs were recovered.

Capt. W. H. Pringle, who was well known around the lakes in connection with the building of the steamers W. D. Rust and Onoko, was a few days ago elected chief of police of San Diego, Cal. Capt. Pringle was fairly wealthy when he left here a few years ago for California. One of the San Diego papers now says in connection with his appointment that he has a large ranch and other properties and is quoted as being worth \$200,000.

In General.

Authorities on the grain crop agree that corn is hardly maintaining its condition, and to considerable extent needs warmth and moisture shortly to avert serious injury.

An appropriation of \$10,000 is available for improvement work on the Portage lake canals now owned by the government, so that the shallow portion of the upper canal can be dredged without delay.

The White Star Line steamer Majestic is the latest to lower the ocean record from Queenstown to New York. She completed the voyage on the 5th instant in 5 days, 18 hours and 7 minutes, beating the best record of the City of Paris by 65 minutes.

The decision of Judge Jenkins of Milwaukee in the Armour-Marion case is not satisfactory to either side. The court was crowded with other matters when the case was tried and it would probably have been better if the judge had allowed his decision to await his return from Europe in the fall.

The unsinkable steamer Howard Cassard, built at Baltimore after the arrow system of construction, and commented on very extensively in all parts of the world, will shortly be given a trial trip. The directors of the company, which has put a very large amount of money into the odd shaped boat, are well pleased with the trials of the machinery already made.

MARINE REVIEW.

DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

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The books of the United States treasury department contain the names of 3,510 vessels, measuring 1,063,063.90 tons in the lake trade. In classification of this fleet the lakes have more steamboats of 1,000 to 2,500 tons than the combined ownership of this class of vessels in all other sections of the country. The classification is as follows:

Class.	Number.	Tonnage.
Steam vessels	1,527	652,922.25
Sailing vessels.....	1,272	328,655.96
Canal boats.....	657	67,574.90
Barges.....	54	13,910.09
Total.....	3,510	1,063,063.90

According to the report of William W. Bates, United States commissioner of navigation, 46 per cent. of the new tonnage of the country was built on the lakes during 1889. This is a percentage greater than the work of the Atlantic coast and western rivers combined, and almost equal to the whole work on the Atlantic and Pacific coast. In 1890 the tonnage built on the lakes is but very little less than that built on the Atlantic and Gulf coasts. Tonnage built on the lakes during the past five years was as follows:

	No. of boats.	Net Tonnage.
1886.....	85	20,400.54
1887.....	152	56,488.32
1888.....	222	101,102.87
1889.....	225	107,080.30
1890.....	218	108,515.00
Total.....	902	393,597.03

St. Mary's Falls and Suez canal traffic: Number of boats through St. Mary's Falls canal in 1890, 234 days of navigation, 10,557; tonnage, net registered, 8,454,435. Number of boats through Suez canal during 1890, full year, 3,389; tonnage, net registered, 6,890,014.

Tonnage passing through Detroit river during 234 days of navigation in 1889, amounted to 36,203,606 tons. Ten million tons more than the entries and clearances of all the seaports in the United States, and three million tons more than the combined foreign and coastwise shipping of Liverpool and London.

Annual tonnage entries and clearances of the great seaports of the world, for 1889: New York, 11,051,236 tons; all seaports in the United States, 26,983,315 tons; Liverpool, 14,175,200 tons; London, 19,245,417 tons.

Entered at Cleveland Post Office as Second-class Mail Matter.

NEWSPAPERS at the head of Lake Superior and in other lake cities want another water-ways convention to urge appropriations for lake improvements. Congressman Chipman is said to favor the holding of a convention to deal with the 20-foot channel matter, and Minneapolis papers again bring up the question of urging the construction of a canal around Niagara Falls. It is not probable, however, that lake interests in Cleveland, Buffalo, Detroit and other leading ports, where more than 75 per cent. of the floating property is owned, can be induced to join in such a movement, especially as regards the 20-foot channel project, or agitation in favor of light-houses, fog signals and other aids to navigation, all of which will be provided for in the future under a system laid down by the officers of the Lake Carriers' Association and other organizations, who are now working in harmony with government engineers. These organizations know what is most needed and their officers, who have learned by experience the best manner of proceeding in such matters, may be depended upon to look after the best interests of all concerned. Big conventions are good enough in their way, and there is no doubt that great influence was exerted by the gathering held at Sault Ste. Marie a few years ago when the improvements in that vicinity were planned, but the 20-foot channel between Duluth, Chicago and Buffalo is assured without the holding of a convention. Appropriations for the work, which will amount to about \$3,000,000, have not been

secured, but they may be expected in the ordinary course of legislation, as it would be folly on the part of the government to build a canal 20 feet deep and not provide navigation of similar depth through to Lake Erie. The Sault canal and Hay lake work may not be progressing as speedily as some interests would desire, but it is confidently expected that the regular appropriations will have provided a 20-foot navigation in the St. Clair and Detroit rivers by the time the Sault works are completed. As regards the outlet to the seaboard in accordance with this deep navigation on the lakes, there is a wide difference of opinion, especially on the question of a canal around Niagara Falls, which might await for years the development of St. Lawrence improvements and would in the end give the export trade to Montreal. The settlement of this question will undoubtedly demand an immense convention of commercial representatives and it will come about in due time.

It may be expected that the line carrying projectile law, twice suspended with regard to the lakes, will be as far as it relates to lake vessels repealed by the next Congress. When by skilful parliamentary work in the closing days of the last congress the law was suspended for a year on the lakes, although it has since been in force on the coast, the secretary of the treasury was instructed to cause the subject to be investigated and report to the Fifty-second Congress. This investigation has now been ordered to take place in Washington, Sept. 28, under the direction of the supervising inspectors of steam vessels. Supervising Inspector General James A. Dumont has already expressed himself strongly in opposition to these guns and projectiles on the lakes, on account of their uselessness in these waters. Still it would seem fitting that the investigation should be given attention by the officers of the Lake Carriers' Association having charge of legislative affairs, as this law has already caused vessel owners an unusual share of annoyance.

At last an officer of the engineer corps of the army, Major Charles E. L. B. Davis, has taken charge of the Portage lake canals in accordance with instructions from the war department, following the transfer of the property. It is unfortunate that the upper entrance to the canals has been allowed to fill up pending the completion of the transfer, so long delayed by the Washington authorities, but now that an engineer is on the ground there is promise of a speedy removal of the bar that has formed in the upper canal. Major Davis says he has already closed a contract for dredging and the work will be pushed.

THIS country will be sending an average of over 3,000,000 bushels of wheat a week to Europe during the cereal year just begun. All authorities on grain matters agree that there will be a deficiency of about 280,000,000 bushels in England and the continent and that about 160,000,000 bushels of this will be supplied by the American surplus. This is a big job for merchants and shippers on both sides. They have never done as much before as they will have to do this year. Floating property on the lakes will, of course, get its share of the business between the seaboard and the northwest.

LEADING Journals of New York and other Atlantic coast ports are agitating the matter of establishing electrical communication between light-houses and the shore, on the claim that vessels in distress coming to the notice of the keepers of light-houses or light-ships might be completely located and the work of rendering them assistance facilitated in this way. This argument applies with equal force in many parts of the lakes where communication with light-houses and life-saving stations is often too long delayed.

THREE DOLLARS FOR TWO—THE MARINE REVIEW AND DETROIT TRIBUNE (WEEKLY) ONE YEAR FOR \$2.

Around the Lakes.

Capt. Thomas Martin, a well known ship broker and vessel owner of Oswego, died on the 5th inst.

A Lake Shore train backed a car in the Harbor Ship Chandlery Company's store at Ashtabula Harbor, Monday, doing considerable damage.

The schooner H. W. Sage will get a general rebuild at Buffalo. She will receive steel arches, deck, rail, plankshear, stringers and refastening.

Burger & Burger are now at work enlarging their dry dock at Manitowoc. When this work is completed the dock will have capacity for the largest boats.

At the works of the American Steel Barge Company, Superior, barges 115 and 116 are about ready for launching and work has begun on Nos. 117 and 118.

Three of the twelve Brown hoists to be built on the new lake front docks at Ashtabula are about completed and work has already been begun on three more.

Capt. James Davidson of West Bay City is said to have arranged plans for the formation of a stock company to take the ownership of the "Big Four" steamers.

The tank boats built by the American Steel Barge Company for the Standard Oil Company will be given a load of about a million feet of lath to go direct to New York.

Capt. Solomon Foster of the schooner Mary Woolson died aboard his vessel when off Waugoshance Sunday night. The remains were taken to his late home in Bay City.

James Norris, shipowner and merchant miller, died suddenly at his home in St. Catharines recently. Mr. Norris was formerly a partner of Sylvester Neelon and the firm owned several vessels in the Canadian lake trade.

The forward movement of grain from Chicago for the four days ending last night, as represented in the chartering of boats, was something enormous, the totals of all kinds of grain aggregating 3,081,000 bushels.

Capt. Cottrell of the Minnesota Company's steamship Maruba had the mate take the boat around on the last trip, on account of sickness in his family, and it was this that gave rise to the report of a change in the command of the boat.

Gen. Poe was informed a short time ago that the men in charge of the tugs and scows engaged in the dredging work at the St. Clair canal were towing the scows by a single line from one corner. He has ordered that more care be taken in handling the scows.

Gen. Poe has informed Capt. Geo. P. McKay that the shoal spots heretofore existing in the lower approach to St. Clair Flats canal, have been entirely removed by dredging, which, in each case was carried to a depth of 18 feet. Commander Heyerman will be asked to mark the deep channel at this point by buoys.

At the annual meeting of the Hollister Transportation Company in Tonawanda Friday the old officers were reelected—G. C. Hollister, president; G. A. Hollister, vice-president; C. H. Woodruff, secretary, treasurer and general manager. The company owns the steel steamship Emily P. Weed and the J. C. Pringle and consorts.

Capt. D. P. Dobbins, district superintendent U. S. life saving service, is said to claim ownership of the U. S. S. Niagara, one of Perry's fleet sunk in Misery bay, Erie, for preservation. His father built the Niagara and Capt. Dobbins is anxious to have the hull raised and taken to the World's Fair. The venerable captain's life saving work began in 1825 at Conneaut, where he was one of the boat's crew from the revenue cutter Erie. The small boat was capsized three times before they reached a stranded vessel and saved the crew.

At Saugatuck, Mich., last week, Capt. R. C. Brittain launched the steamer O. E. Parks, of which he is sole owner. Her dimensions are: Length of keel 136 feet; over all 146 feet; beam 28 feet; hold 11 feet. The engine is a steeple compound, with cylinders 16 and 34 inches in diameter 24 inches stroke. The boiler is 7½ feet in diameter 12 feet long of ⅝ inch steel, with a working pressure of 140 pounds steam. The new boat will engage in the lumber trade out of Michigan City. She will carry about 350,000 feet. She was christened O. E. Parks, in honor of the gentleman who is to have command. The valuation of the Parks is placed at \$30,000.

The steel tug Pier, being built by the Union Dry Dock Company of Buffalo for the New York Dock Construction Company, was launched Tuesday. She has a coil boiler and triple expansion engines. The boat will leave for New York in about two weeks.

The treasury department has \$20,000 to be applied to the building of a small boat for boarding vessels entering Chicago harbor. Some time ago inquiry was made among lake shipbuilders as to the cost of a boat for which the department had plans prepared, but it was found that the kind of boat desired would cost two or three times the amount of money on hand. It is again said that advertisements will soon be issued calling for bids on the boat to be opened Sept. 1. Whether the plans have been modified or more money secured is not known.

Edward B. Bartlett is the name of the latest addition to the whale-back fleet of steamers. She made a trial trip from West Superior and took on 80,000 bushels of wheat for Buffalo Thursday. The Bartlett is an exact duplicate of the Wetmore, now loading machinery at New York to equip the American Steel Barge Company's ship yard on Puget sound. The Bartlett's engines were furnished by the North Eastern Marine Engineering Company, Limited, Sunderland, England, and their performance is being watched with great interest by lake engine builders.

The steamer Ohio, which has been out of commission since she sunk in the Sault river, will go into service in a few days. She has received a thorough rebuild at West Bay City, and will hereafter be known as the Chicago, with C. W. Elphicke as managing owner. Capt. Elphicke, who bought the Ohio from Crosby & MacDonald, the underwriters to whom she was abandoned, has transferred to F. D. Montgomery one half interest for the nominal consideration of \$1, and sold to Anna L. Fitch one-eighth interest for \$1,500. The rebuilt boat will cost the owners about \$40,000.

They Were All Interested.

"The first river and harbor bill passed under suspension of the rules was reported by me," said the jovial Senator Sawyer, as the congressional party sat around the table in the cabin of the government tug coming up Hay lake. The bill carried \$8,000,000, and when I proposed a suspension of the rules, Mr. Beck said to one of his friends:

"Does that gray-haired old fool think he is going to get an \$8,000,000 bill through the house without debate? He can't get twenty votes."

"When the vote was announced there were only twenty-five in opposition. Then I went over to Beck and said:

"Beck that gray-haired old fool knows more than you thought he did, now doesn't he. Come own up."

"Beck owned up and asked me how I did it. So I told him the story of the eleven jurors who had some of the pork and said that eleven out of twelve men in the house had something in that bill, the senate added a lot more, and when the bill came back the house was in commotion, but Joe. Cameron says I quelled the storm by saying, 'Now boys, sit down; every fellow's thing is in this bill just as it was when the bill left the house.' The senate amendments were concurred in and the bill became a law."—Correspondence in the Detroit Tribune.

Windlasses for Cruisers.

The windlasses for the U. S. cruiser No. 2, the New York, are probably the heaviest work now under way at the shops of the American Ship Windlass Company, Providence. They will have cylinders 12 by 14 inches, an estimated weight of 45,000 pounds and will handle a 2¼ inch chain. The Rivers patent chain indicator is applied to these, as well as some other large windlasses. By means of a friction device, a dial indicator, which may be placed in pilot house, bridge, on deck or in the cabin, will show the length of cable out. Other windlasses are being built for cruisers 10 and 11, U. S. revenue cutter Levi Woodbury, for lightships built by the Union Iron Works at San Francisco and by Harrison Loring at South Boston. Four light vessels for the Atlantic coast, to be built at Wheeler's yard in West Bay City, Mich., and two light-house tenders being built by the Globe Iron Works, Cleveland, will all have Providence windlasses.

Duluth will have Double Last Year's Amount of Grain.

Special Correspondence to the MARINE REVIEW.

DULUTH, Minn., Aug. 13.—The news from the wheat fields continue favorable for an immense crop. For a few days there has been a scare about the intensely hot weather, but it is pretty safe to say that it will not have much damaging effect. Chief State Inspector Cousen says the crop of Minnesota and the Dakota's will be 120,000,000 bushels. It will certainly be over 100,000,000 bushels, and the Duluth people are more inclined to make their estimate of the amount to come here 30,000,000 bushels, or nearly double the amount on the last crop. Prices still continue good. It is not known what effect the movement to induce farmers to hold back their wheat will have, probably not any. The northwestern farmer has always done that, when he could, selling only as he needed money or as prices suited him. There is no danger but all the wheat will be marketed that the railroads can take care of. The trouble will be in shipping it to terminal points.

The wheat movement out of Duluth last week was good. Shipments by lake and rail were 505,000 bushels, and all but about 20,000 bushels was by lake. Stocks here are now down to 276,000 bushels, and this week will reduce them still further, though receipts of 200,000 or 400,000 bushels may be expected from Minneapolis for immediate export. Rates last week ranged from 3 to 3½ cents, the former by line boats. Since Monday the 3-cent rate has been weak, as there is not grain enough to go around. The ore shipments from Two Harbors last week were again large, and for the season shipments are now only about 40,000 tons below last year's record.

CHICAGO LAKE INTERESTS.

WESTERN OFFICE, MARINE REVIEW,
No. 210 So. Water Street, CHICAGO, Ill., Aug. 13.

There is no doubt that the Graham & Morton Line will build another big steamer for its passenger business between Chicago and St. Joe for service next season. The business of this line has so rapidly increased this season that to make an addition to its fleet is absolutely necessary. At present the Graham & Morton people have the City of Chicago and Puritan. The latter is one of the best boats for her size on the lakes, but she is not large enough to fit in with the City of Chicago in accommodating the increasing traffic. What is needed is another boat of even greater capacity than the City of Chicago, and then the two can be handled together with much better results. Mr. Graham told me Sunday that a new boat was to be built, but he was not ready to give out the details.

Why should vessel owners around the lakes flood the grain trade with tonnage every time there is a slight advance in rates, compared with iron ore? They do so, and the result is that the common enemy is enabled to defeat the carriers in detail. Some very sharp Chicago shippers bank on this weakness in the marine business. They are the most stubborn bears on lake rates until they see that an advance is inevitable. Then they jump in and help push rates out of proportion to iron ore. As soon as rates are up they go short on their lake freight—that is sell grain on the basis of existing rates without having the boats—and then trust to vesselmen to rush in tonnage until rates go flat again. It is a pretty game and vessel owners play it right along to their loss. No one who has common sense, is going to suppose that a vessel owner is going to refuse a good freight in order that someone else can get it, but there is a proposition based on good business principles which ought to receive consideration. If a man has a half dozen boats engaged in general lake carrying, does it pay him for the sake of, say \$200, to break lake grain rates a quarter of a cent? While that one boat is making the \$200 extra, the other five boats have the value of their capacity just so much diminished. This throwing boats from one trade to another results in breaking them all down in turn. When wheat was paying 3¼ cents to Buffalo, vessel owners were not satisfied until they filled Chicago river with boats. They knocked the pins clean out of the business, and then they pounded the ore trade. Just two boats more than the demands from shippers caused Monday's break. It was reported that day that boats had been chartered to arrive this week at 2¾ cents on wheat. Some vessel agents said they were certain it had been done. If they were correct then some vessel owner around the lakes donated ¼ cent to Chicago shippers. On close inquiry it was found that considerable wheat was taken as late as Saturday noon for shipment the following Wednesday or Thursday at 3 cents. That was the rate fairly enough. If any one took less, they took less than the market.

In regard to the fine of \$100 imposed on Capt. McFarlane of the Lehigh Valley Liner Tuscarora for obstructing the river, there are two sides of the story. One is that the harbor master on duty did not show he had authority, as he was only a river policeman. Vesselmen are divided about the justness of the fine, but there can hardly be any doubt about the duty of vessel captains to move when ordered to do so by the harbor master. It is said that Capt. McFarlane's fine will be suspended, as he was the first example. That may be well enough for a starter, but if after ample warning vessel captains continue to dispute all control over their boats then the fines should be made to stick. No one wants to make martyrs, but to

have the laws enforced. Capt. McFarlane was unfortunate in being the first to be hauled up. Hundreds of cases as bad as his had been passed over before the city gave orders to the harbor master to strictly enforce the river ordinances.

O. S. Richardson says that his attorney tells him that the attempt of the owners of the barge Michigan to collect damages on account of the boat breaking in two while unloading coal at his dock is ridiculous. Robert Ray, representing the Michigan's owners, says he could not have a clearer case. Thus both seem to be in a splendid position for a law suit. Some one is going to be disappointed. Chicago marine men have unmercifully grieved your representative here about an article that occurred in an opposition paper relative to the damages to the Michigan. It is not worth a serious answer, and I have settled with my friend with proper irrigation for the dog days. By the way, the Michigan, after being in the shipyard two weeks has been repaired so she can finish this season.

The Canadian steamer Campana, which began running this season between Chicago and Kingston is doing an excellent passenger business. On her trip up this week she had 60 first-class cabin passengers, and took out a full load. It is understood that the experiment of sending her here is proving satisfactory to her owners.

The barge Frank D. Ewen was detained here from Saturday night till Monday morning by going aground in "Mud lake" just after leaving the elevator. There is certainly no profit in loading too deeply at points far up the river.

West Bay City Builders Talk of More Ships.

Special Correspondence to the MARINE REVIEW.

WEST BAY CITY, Mich., Aug. 13.—Despite the fact that there has been a great deal said about the closing of wooden shipyards for good, and that steel ships are to be the only ones wanted in the future, there is talk of three wooden propellers and a schooner to be built here during the coming winter, among them the big steamer for which Capt. James Davidson has prepared plans. Hon. F. W. Wheeler is very reticent about what will be done at Wheeler & Co.'s yard, but it is rumored that there will be a large amount of work outside the government light-ships, and there is a possibility that a part of this work will be a steel yacht for an eastern millionaire, to cost \$200,000. Plans for this vessel have been prepared and among other requirements is one that she shall make an average of 20 miles an hour. The engines are to be quadruple expansion and the vessel is to be finished throughout with nickel and brass. Mr. Wheeler went east the first of the week and his return may bring the news of a contract for this yacht, although with the competitors of the east looking with longing eyes after the job, there are many opportunities for his losing it.

The work of making the keels for the government light-ships has been begun at Wheeler & Co.'s yard and they will be laid the latter part of the week. E. D. Hammond of Boston has been appointed government inspector of the work and is already on the ground.

Inadequate Facilities for Handling Grain.

Special Correspondence to the MARINE REVIEW.

KINGSTON, Ont., Aug. 13.—The largest quantity of grain that ever came here on one day arrived on Friday last. It was 260,000 bushels, but the elevating facilities were equal to the emergency and the grain was on the way to Montreal in barges within 24 hours of its arrival. The forwarding companies will no doubt this fall experience the want of an elevator here, now that a rush of grain must come this way. It was thought that this question would have been disposed of by the government long ere this, but owing to the investigations now being held at Ottawa into the administration of the different departments many important matters have been overlooked, the elevator at Kingston among them. If the facilities here are overtaxed, the surplus of grain will no doubt be stored at Ogdensburg, which fact will make the government give a final decision as to whether a rebate on canal tolls will be given on grain stored there.

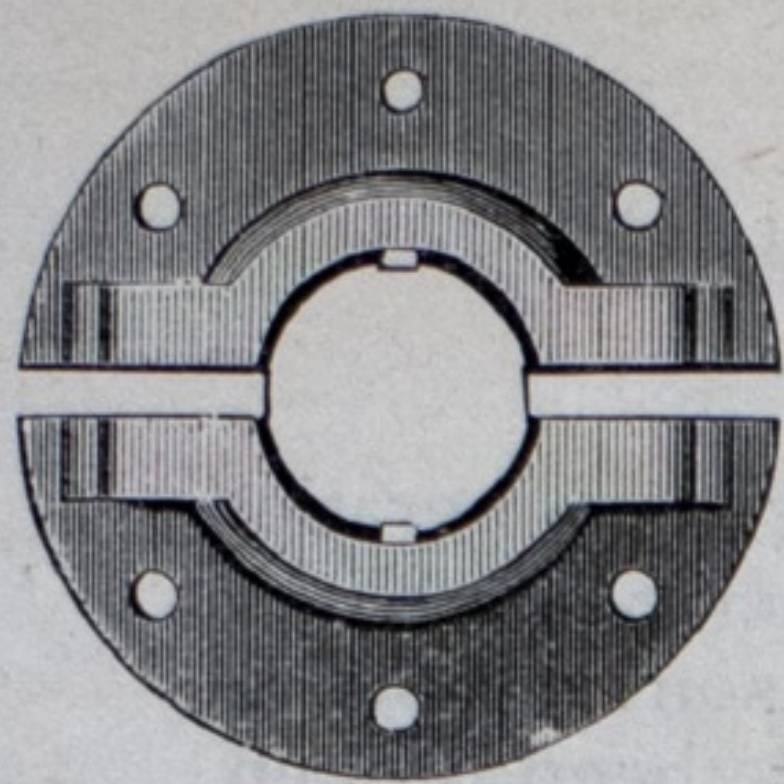
Two well known mariners and shipowners are at loggerheads. Some time ago the government took tenders for coal for the penitentiary, and the contract was awarded to James Swift. Capt. John Gaskin was among the tenderers. He claims that his tender was the lowest and that the successful tenderer received information from the department which enabled him to reduce his figures. A newspaper warfare has been entered into. In his last letter Mr. Swift asks for an investigation so that it can be shown that he did not act dishonorably.

The minister of marine has received notice from the imperial government to the effect that the load line act which was to come into force last month, will not take effect until July of 1892. This delay is for the purpose of giving Canadian vessels a full year in which to prepare for the requirements of the act.

The schooner Neelon, which brought wheat from Chicago, must have experienced rough weather on the way down. When she was unloaded it was discovered that 2,000 bushels of her cargo was in bad shape.

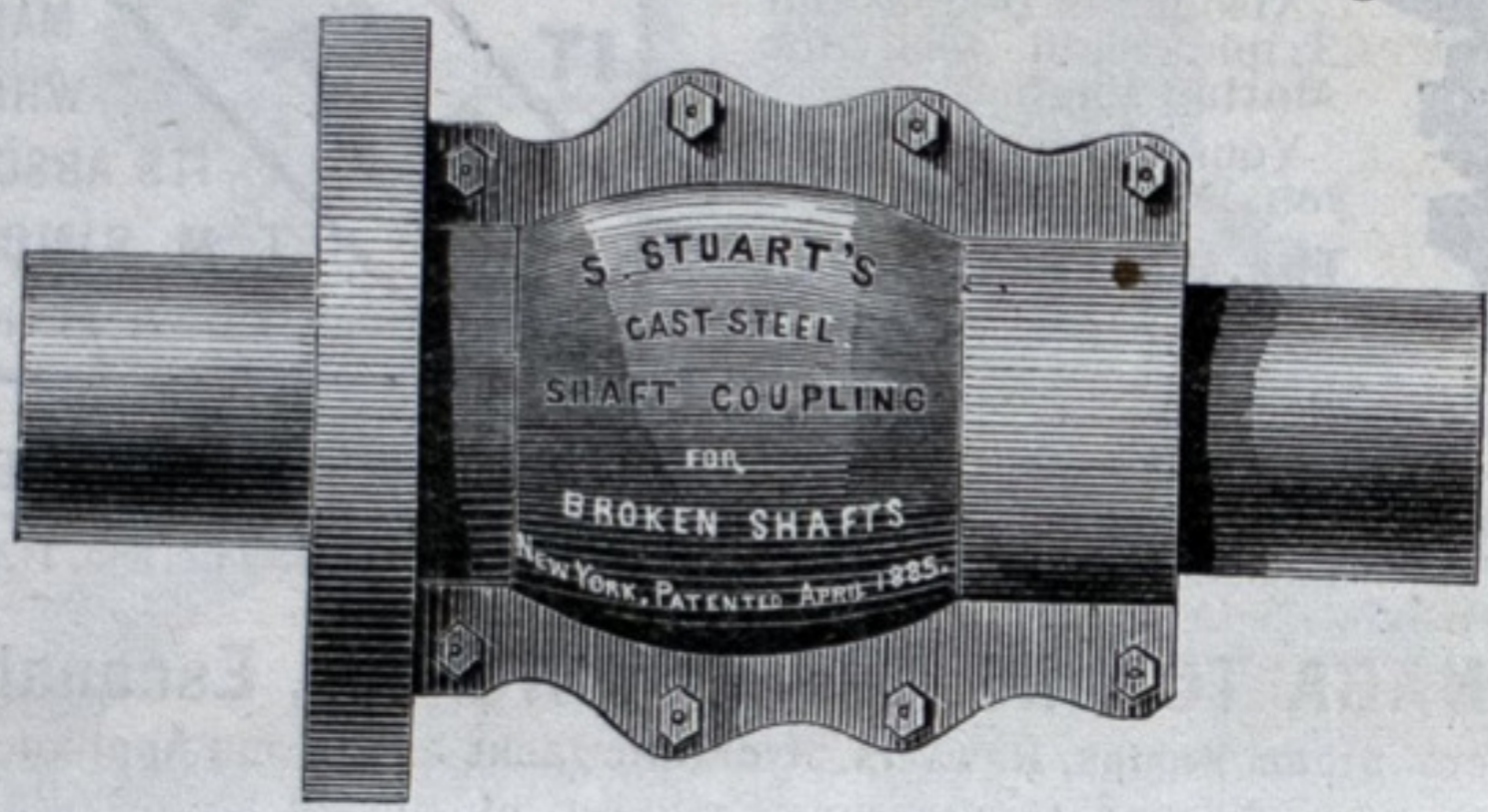
THE DETROIT TRIBUNE (WEEKLY) AND THE MARINE REVIEW, ONE YEAR, \$2, THE PRICE OF ONE.

Coupling for Broken Shafts.



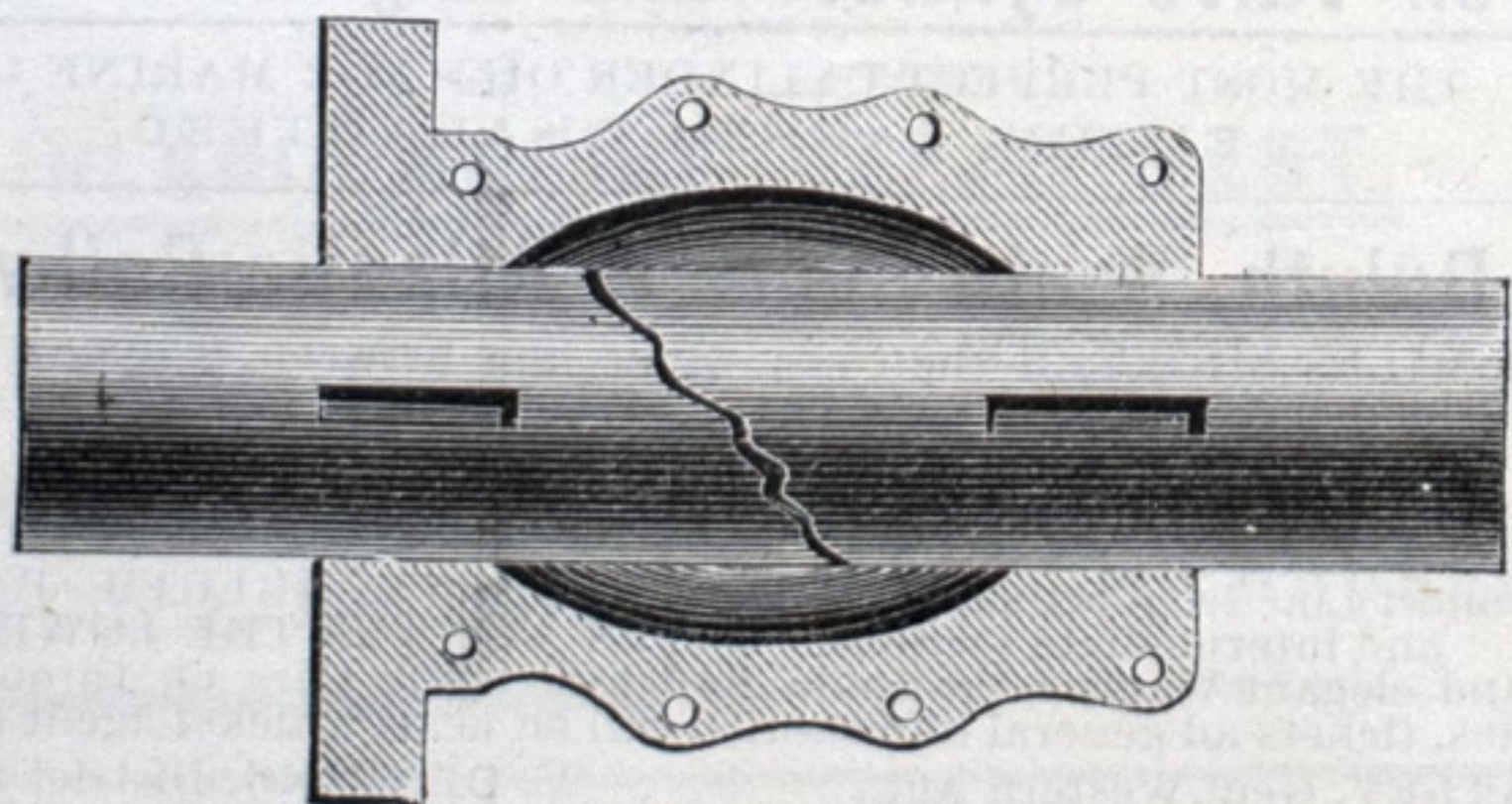
OWNERS of lake steamers should examine the claims made for this coupling. The breaking of a shaft is infrequent but when it does occur the cost of one of these couplings is rendered insignificant as compared with the cost of being towed into port by tugs or some other steamer. Then again the time spent in waiting for a new shaft would be saved by the device illustrated.

This coupling, adopted by the United States navy and leading steamship owners in the United States, is acknowledged to be the most reliable, serviceable and simple appliance for broken shafts, or shafts having any flaw or slight fracture, which it may not be convenient to remove at once. With the coupling fitted such imperfect shaft may be used for a considerable time. It is fitted in a few hours' time to a broken shaft at sea, and by its use the shaft is kept in first-rate condition, and the vessel enabled to do her work as before the accident, the coupling remaining over the break until a convenient opportunity occurs to renew the broken length of shaft. It is in two sections, which fit over the shaft and are bolted together, while each section has two feathers which fit in key-seats cut in shaft. The great strength



of this direct and simple manner of clamping will be seen at once by referring to the illustrations, while the feathers fitting in key-seats in shaft will hold the latter firmly in place, although it may be broken squarely in two. Four key-seats only are required to be cut, two in each end of broken shaft, the swell in coupling allowing for any inequalities at the fractured part, and the keys or feathers secure each end from working either in or out. Provision is also made for attaching this apparatus to the shaft coupling, should breakage occur at this part; and it can be used to receive thrust in event of injury to thrust bearings. Its efficiency has been thoroughly tested, and by its use many steamers have been enabled to complete long voyages, thus avoiding long delays and hurried costly repairs, the coupling remaining in place until a home port is reached, or a convenient time for repairing decided upon.

The following testimony is from those who have used it: William P. Clyde & Co. write that "it has been used on several occasions where we have either had flaws or had occasion to fear



them, and it proved safe and effective." Mr. J. B. Houston writes that "it has proved very valuable to the Pacific Mail Steamship Company, having been applied to the broken shaft of the well known steamship Granada, enabling her to make her usual schedule time between Panama and San Francisco." Without the coupling this vessel would have been compelled to wait at Panama for a new shaft to be sent from New York or San Francisco. The Metropolitan Steamship Company had one applied "on what appeared a fracture in the shaft, but of no immediate danger. A new shaft was at once ordered to replace the fractured one at first opportunity. About six weeks later, we removed the old shaft to replace it with the new one. On removing

your clamp we found the shaft broken in two pieces and from the appearance of the broken ends they had been separated for some time."

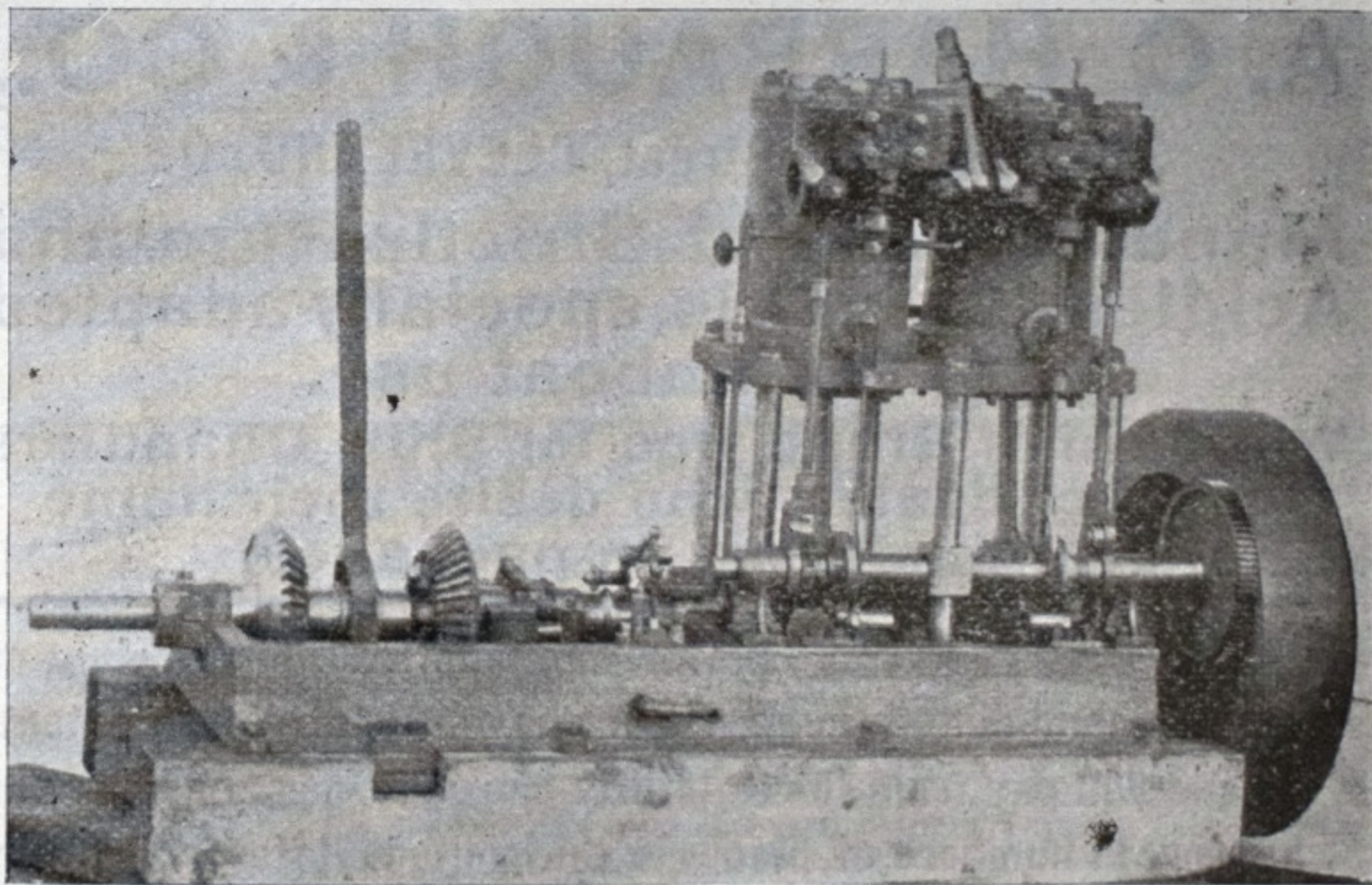
The tensile strain of the cast steel coupling is 60,000 pounds per square inch. Among the steamship companies on whose vessels the coupling is carried as part of the equipment are the Compagnie General Transatlantique, Pacific Mail Steamship Company, Red D Line, Mallory Line, Netherland American Steam Navigation Company, New York and Cuba Mail Steamship Company, Clyde Line, United States and Brazil Mail Steamship Company, Ocean Steamship Company of Savannah, Oceanic Steamship Company, Pacific Improvement Company, Old Dominion Steamship Company, Oregon Railway and Navigation Company, Cromwell Line, Pacific Coast Steamship Company and many others. The large number of steamships whose shafts have broken this summer calls for some such device as the above to be carried on board ship and ready at all times to be applied to a fractured or broken shaft. The Stuart coupling is carried by upwards of 500 steam vessels, including steamships, steam yachts and steamboats. It is the invention of Sinclair Stuart, No. 50 Wall street, office U. S. Lloyds, New York. Any one desiring a circular containing the names of steamers supplied with this device can obtain one by addressing the above.

The Sintz Gas Engine.

MANUFACTURED BY CLARK SINTZ, SPRINGFIELD, O.

Several weeks ago Mr. Ballin of the Detroit Boat Works said, pointing to a hull and a gas engine, "If that engine will drive that hull eight miles an hour, it will be the most efficient gas engine on the market and the finest naphtha launches can be built for a great deal less than they cost at present." Since then the boat has been launched and has made over eight miles an hour. The hull is 29 feet long and 7 feet beam. The cost of the fuel amounts to but $\frac{5}{8}$ cents per mile. One barrel of gasoline would run the boat 1,000 miles.

Friction is used instead of the gear as shown for the reverse, as it is noiseless. The engine shown in the accompanying illustration is six horse power, length over all 50 inches, width over all 20 inches, height over all above keel 35 inches, weight less than 800 pounds. The consumption of gasoline is four-tenths gallons per hour or four gallons in ten hours. There is no heat used to generate gas, nor is there a particle of gas generated outside of the

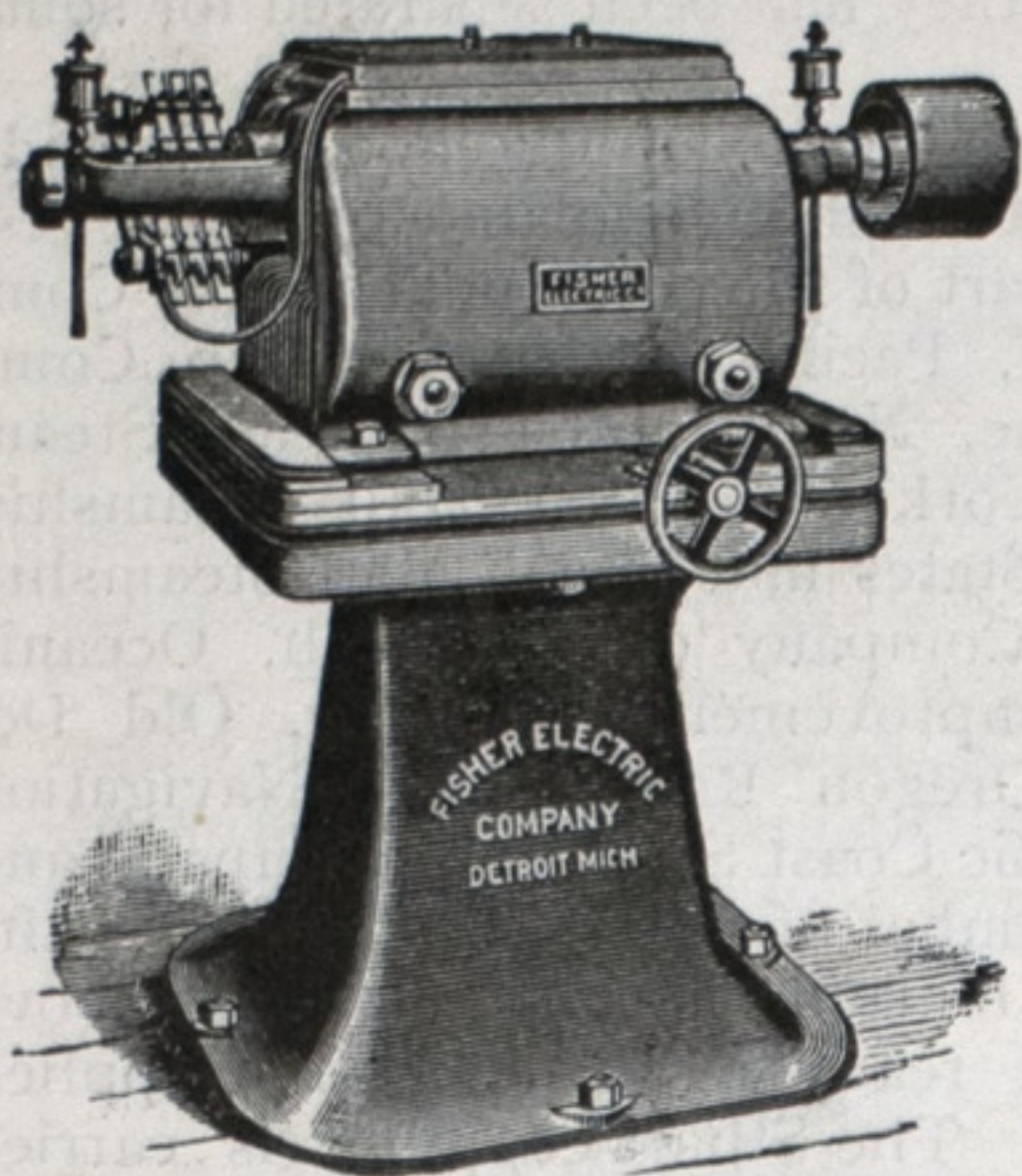


cylinders, and as for safety, gasoline can be poured all over the engine while in operation without danger of igniting, no fire being exposed. The gasoline is stored in a tank in the bow of the boat, and one barrel will last over 120 hours. The total cost of running is less than five cents per hour including fuel, battery and oil. All these features combine in making it the most economical, lightest, reliable, and the only absolute safe propelling power for yachts and launches. The rolling of the boat does not effect the operations of the engine in the least.

Official Numbers and Tonnage.

The following official numbers were assigned lake vessels by the bureau of navigation, W. W. Bates, commissioner, during the week ending August 8: Steam-Combine, Grand Haven, tonnage gross 25.09, net 12.55, No. 126,772; Edna Goodill, Erie, tonnage gross 22.19, net 11.10, No. 136,730; John P. Manning, Cleveland, tonnage gross 13.04, net 7.30, No. 76,972; O. E. Parks, Grand Haven, tonnage gross 392.65, net 289.12, No. 155,208; Tallalusa, Erie, tonnage gross 36.56, net 21.90, No. 145,594.

SEE CAPT. PECK'S LETTER Regarding Incandescent Lighting Plant on the Steamer S. R. KIRBY.



NORTHWESTERN TRANSPORTATION CO.

FISHER ELECTRIC CO.,
Detroit, Mich.,

DETROIT, MICH., Oct. 7, 1890.

GENTLEMEN:—Replying to your inquiry regarding the operation of the 200 Light Incandescent Plant placed on the Steamer S. R. Kirby, we wish to say that the plant has operated during the season without an interruption and has not cost us one cent. No Lamps have been broken, and we would not be without it. Very truly yours,

E. M. PECK, President.

FISHER ELECTRIC COMPANY, 183, 185 & 187 Larned St., West, DETROIT, MICH

VESSEL AND MACHINERY EXCHANGE.

Space under this heading may be used gratis by our advertisers or subscribers to call attention to vessels or any craft, machinery, new or second hand, that they may have for sale. Those wanting machinery of any kind, or wishing to purchase vessels, are invited to take advantage of the same offer. Each item will be limited to three lines. Letters concerning same must mention number attached to item and be addressed MARINE REVIEW, 510 Perry-Payne Building, Cleveland, O.

64—For Sale at a Bargain—Steamboat 78 feet over all, 18 feet beam; double engines; hull in first-class condition.

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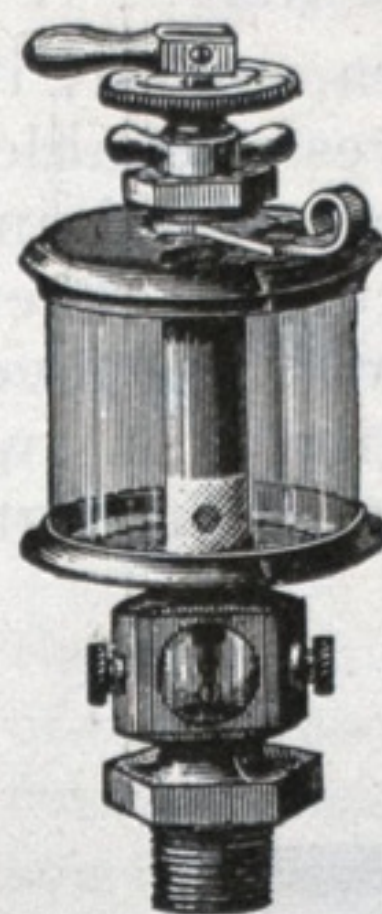
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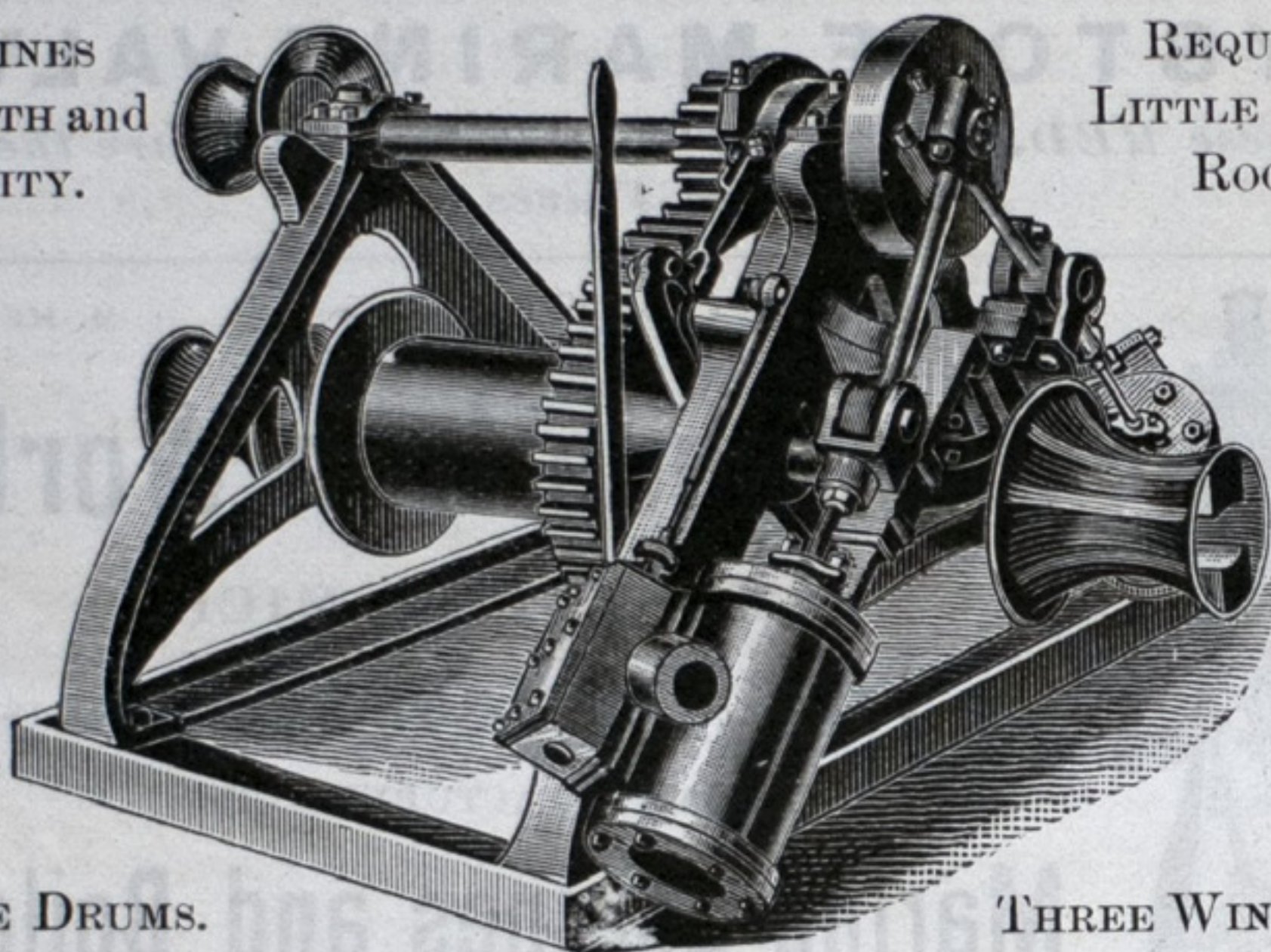
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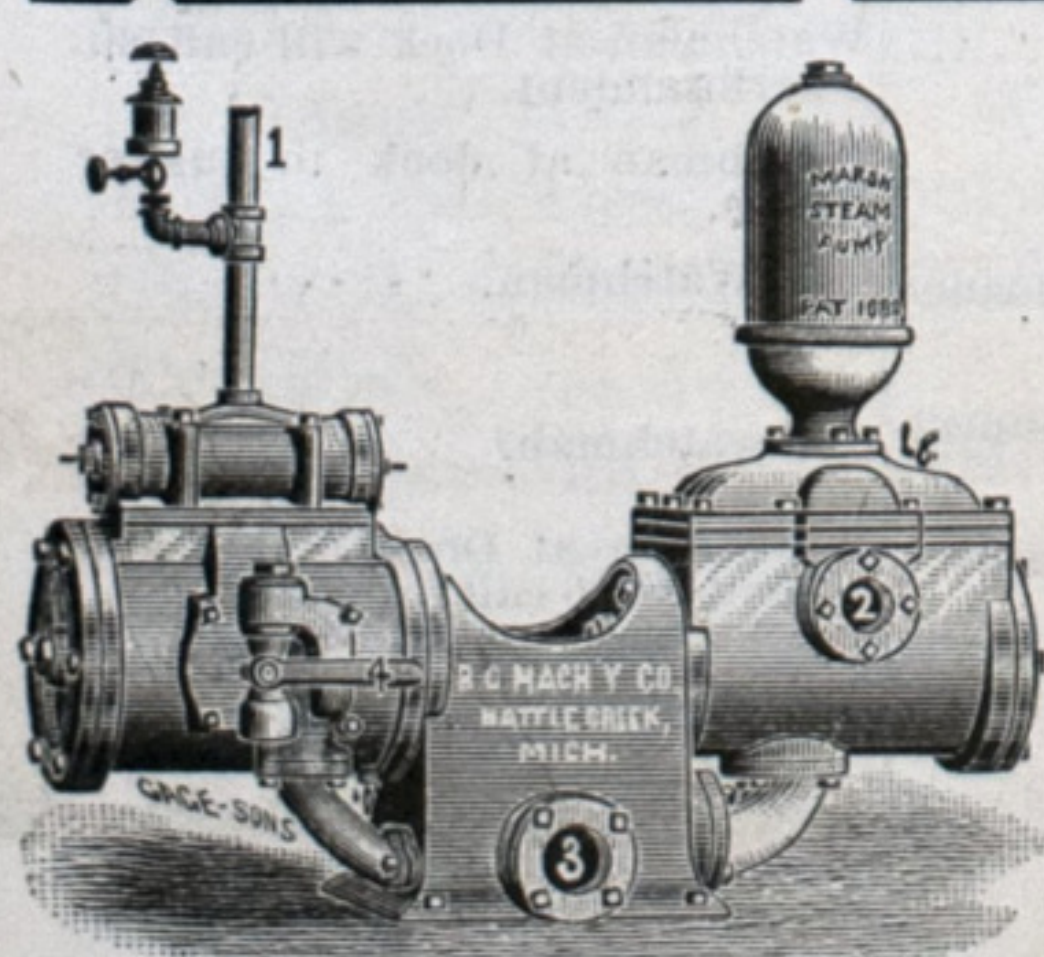
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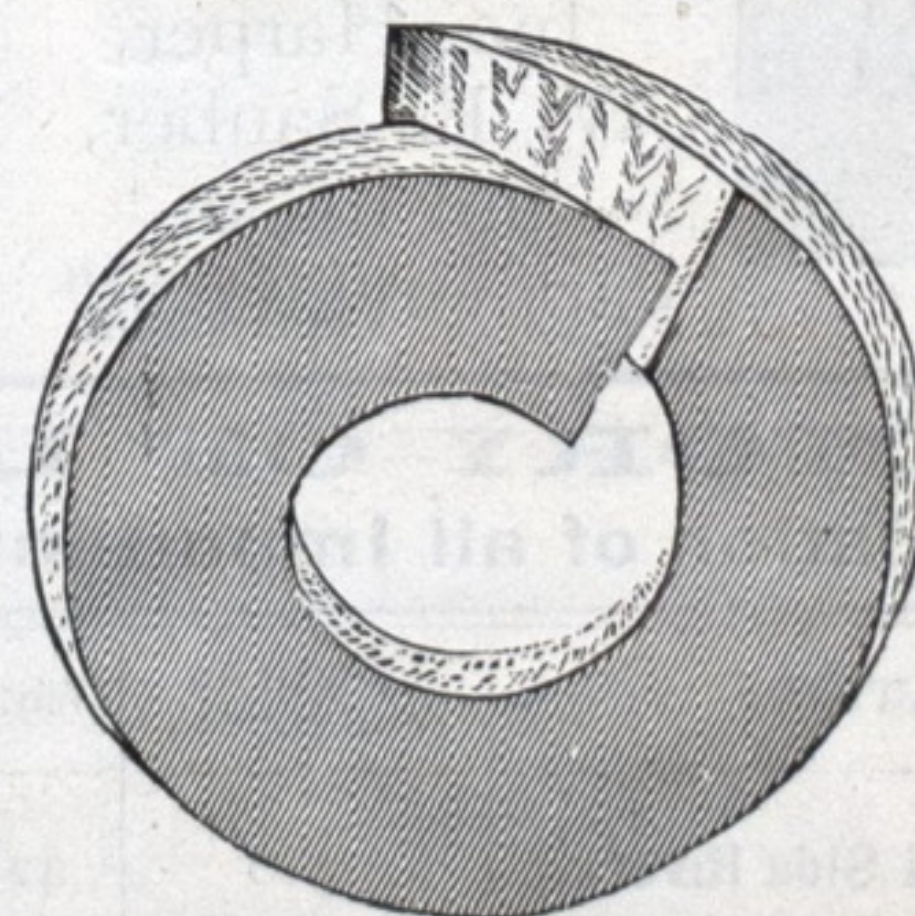
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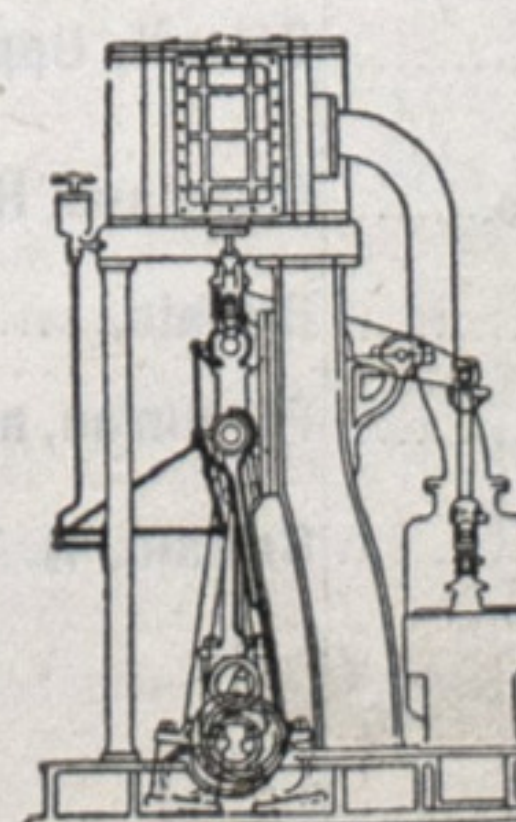
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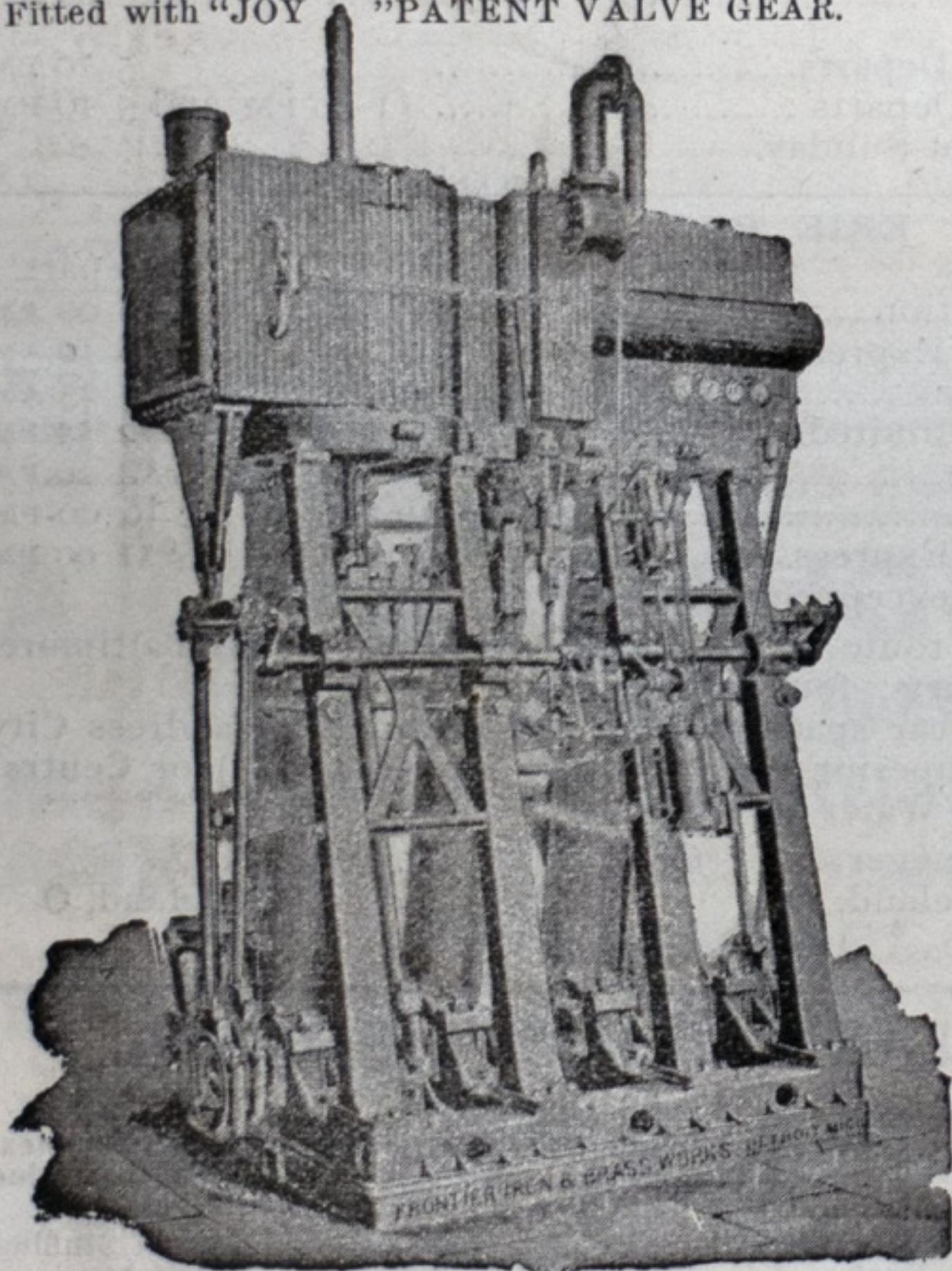
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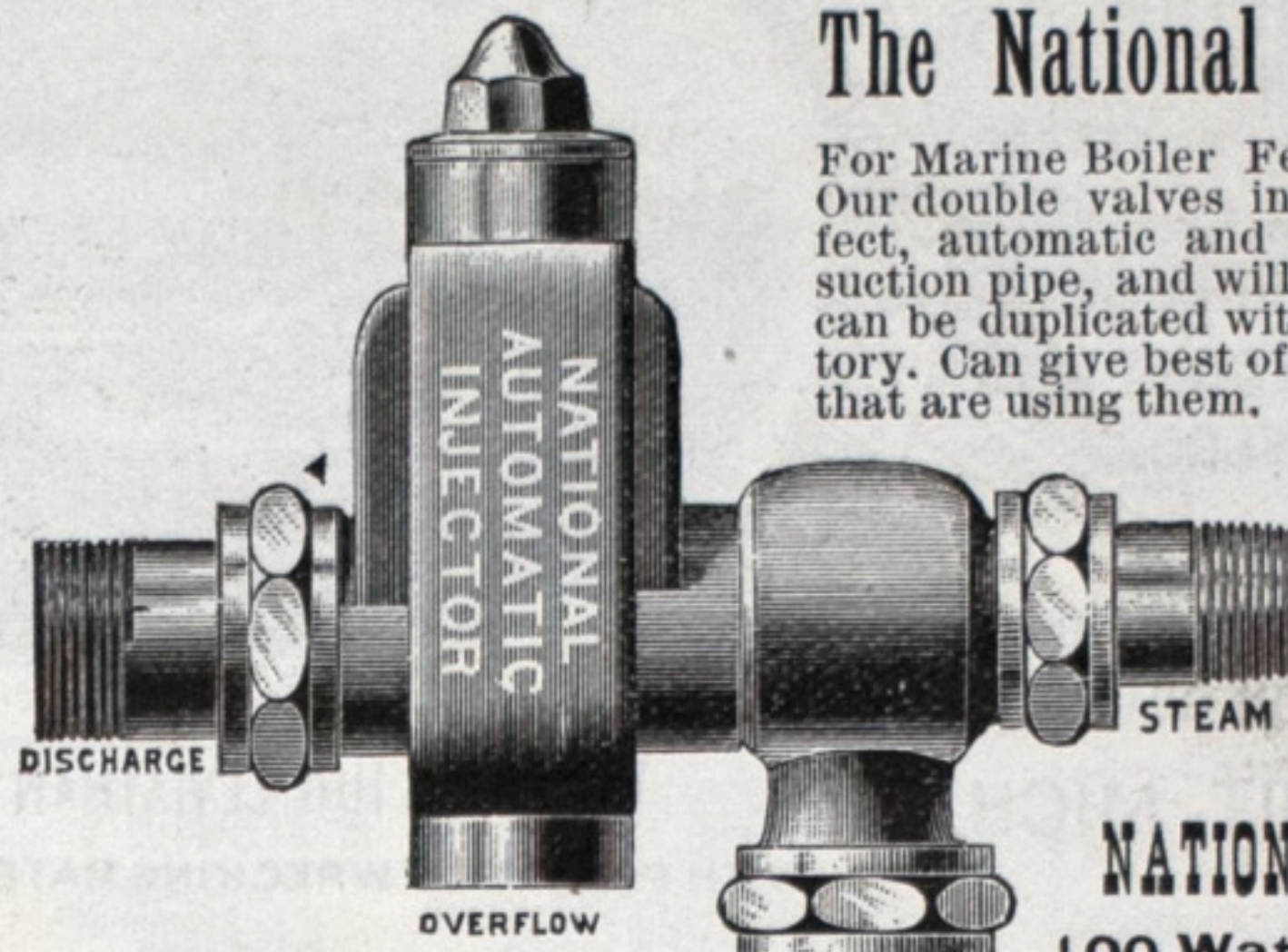
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